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IS 3162 (1965): Specification for Gram Husk [FAD 5: Livestock Feeds, Equipment and Systems]

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Indian Standard
SPECIFICATION FOR GRAM HUSK

(First Reprint JULY 1983)

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 2 *July* 1965

AMENDMENT NO. 1 MAY 1996
TO
IS 3162 : 1965 SPECIFICATION FOR GRAM HUSK

(*Page* 4, *clause* 2.2, *Note*) — Add '[*see* IS 460 (Part 1) : 1985*]' after 'IS Sieve'.

(*Page* 4, *Table* 1) — Substitute the following for the existing table:

TABLE 1 REQUIREMENTS FOR GRAM HUSK

SL NO.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO	
			Clause of IS 7874 (Part 1) : 1975*	Appendix of This standard
(1)	(2)	(3)	(4)	(5)
i)	Moisture, percent by mass, *Max*	10.0	4	—
ii)	Crude protein (nitrogen × 6.25), percent by mass, *Min*	3.0	5	—
iii)	Crude fibre, percent by mass, *Max*	50.0	8	—
iv)	Total ash, percent by mass, *Max*	6.0	—	A
v)	Acid insoluble ash, percent by mass, *Max*	1.0	10	—

NOTE — The requirements for items (ii) to (v) are on moisture-free basis.

*Methods of tests for animal feeds and feeding stuffs : Part 1 General methods.

(*Page* 4) — Add the following foot-note at the end:

'*Specification for test sieves: Part 1 Wire cloth test sieves (*third revision*).'

(*Page* 5, *clause* 5.1, *line* 2) — Substitute 'Appendix C of IS 2052 : 1979*' *for* 'Appendix A of IS : 2052 - 1962*'.

(*Page* 5, *foot-note with* '*' *mark*) — Substitute 'Specification for compounded feeds for cattle (*third revision*)' for the existing title.

(*Page* 6, *clause* 6.2, *line* 1) — Substitute 'IS 1070 : 1992*' *for* 'IS : 1070 - 1960*'.

(*Page* 6, *Appendix* A, *clause* A-1.1, *line* 1) — Substitute 'Appendix C of IS 2052 : 1979† ' *for* 'C-2.1 of IS : 2052 - 1962†'.

(*Page* 6, *foot-note with* '*' *mark*) — Substitute 'Reagent grade water (*third revision*)' for the existing title.

(*Page* 6, *foot-note with* '†' *mark*) — Substitute 'Specification for compounded feeds for cattle (*third revision*)' for the existing title.

(FAD 5)

Reprography Unit, BIS, New Delhi, India

Indian Standard
SPECIFICATION FOR GRAM HUSK

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Indian Standard

SPECIFICATION FOR GRAM HUSK

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 8 July 1965, after the draft finalized by the Animal Feeds Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Gram husk is a common livestock feed in India. The formulation of this standard was undertaken by the Animal Feeds Sectional Committee in accordance with its programme planned for the formulation of Indian Standards for the various livestock feeds used in this country.

0.3 This standard contains a clause (*see* **3.1**) which calls for an agreement between the purchaser and the vendor at the time of placing orders.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of test for gram husk for use as livestock feed.

2. REQUIREMENTS

2.1 Description — Gram husk shall be the outer covering of the gram seed obtained from cleaned gram (*Cicer arietinum* L.) kernels in the normal process of splitting the kernels mechanically for the preparation of gram *DAL*. The material shall be free from adulterants, musty, stale or other objectionable odour or sourness, and from lumps, dirt and extraneous matter including iron or other metallic pieces. The material shall be free from fungus or insect infestation.

2.2 The material shall not contain more than 10 percent by weight of fine powder as determined by sieving 50 g of the material on a 500-micron

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*Rules for rounding off numerical values (*revised*).

IS Sieve for 2 minutes, weighing the powder passing through the sieve and calculating as percentage of the material.

NOTE — If a 500-micron IS Sieve is not available, BS Test Sieve 30, Tyler Test Sieve 32, or ASTM Test Sieve 35 may be used.

2.3 The material shall also conform to the requirements prescribed in Table 1.

TABLE 1 REQUIREMENTS FOR GRAM HUSK

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO	
			Appendix in IS : 2052-1962*	Appendix in this Specification
(1)	(2)	(3)	(4)	(5)
i)	Moisture, percent by weight, *Max*	10·0	C	—
ii)	Crude protein (nitrogen × 6·25), percent by weight, *Min*	3·0	D	—
iii)	Crude fibre, percent by weight, *Max*	50·0	F	—
iv)	Total ash, percent by weight, *Max*	6·0	—	A
v)	Acid insoluble ash, percent by weight, *Max*	1·0	G	—

NOTE — Requirements for items (ii) to (v) are on moisture-free basis.

*Specification for balanced feed mixtures for cattle.

3. PACKING

3.1 Unless otherwise agreed to between the purchaser and the vendor, the material shall be packed in sound jute bags. The mouth of each bag shall be either machine-stitched or rolled over and hand-stitched with strong jute twine.

4. MARKING

4.1 Each bag shall be marked with the following information:

a) Name of the material,

b) Name of the manufacturer, and

c) Net weight in kg.

4.2 Each bag shall also contain a leaflet as well as have a tag securely attached to it on the outside with the following information:

a) Name of the material,
b) Batch or code number,
c) Guaranteed composition, and
d) Date of packing.

4.3 Each bag may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING AND CRITERIA FOR CONFORMITY

5.1 Representative samples of the material for tests shall be drawn according to the method prescribed in Appendix A of IS : 2052-1962*.

5.2 Number of Tests — Tests for crude protein and acid insoluble ash shall be conducted individually on each of the samples constituting a set of test samples while the tests for the remaining characteristics, specified in Table 1, shall be conducted on the composite sample.

5.3 Criteria for Conformity — A lot shall be considered as conforming to the specification, when:

a) each of the test results for crude protein and acid insoluble ash satisfies the requirements as specified in Table 1, and
b) the test results on the composite sample satisfy the requirements for the remaining characteristics specified in Table 1.

5.3.1 If one or more test results do not satisfy the requirements for crude protein and acid insoluble ash, the following procedure shall be adopted for determining the conformity of the material for these two characteristics:

Calculate the mean and range as follows:

$$\text{Mean } (\bar{X}) = \frac{\text{Sum of the test results}}{\text{Number of test samples}}$$

Range (R) = Difference between the maximum and the minimum values of the test results

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*Specification for balanced feed mixtures for cattle.

The requirements for crude protein and acid insoluble ash shall be considered as fulfilled if:

$\bar{X} - 0.4\ R$ is equal to or greater than the requirement for crude protein, and

$\bar{X} + 0.4\ R$ is less than or equal to the requirement for acid insoluble ash.

5.3.2 If the requirements for all the remaining characteristics are not satisfied after testing the composite sample, a test or tests for the characteristic(s) not satisfying the requirement(s) shall be made on each of the test samples in the set. If the test results obtained on each of the individual samples satisfy the requirement(s) of the specification for the relevant characteristic(s), then the lot shall be considered as having satisfied the requirement(s) in respect of such characteristic(s).

6. TESTS

6.1 Tests shall be carried out as prescribed in **2.2** and in the relevant appendices specified in col 4 and 5 of Table 1.

6.2 Pure chemicals and distilled water (*see* IS : 1070-1960*) shall be employed in tests.

NOTE — ' Pure chemicals ' shall mean chemicals that do not contain impurities which affect the experimental results.

APPENDIX A

[*Table* 1, *Item* (iv)]

DETERMINATION OF TOTAL ASH

A-1. PROCEDURE

A-1.1 Weigh accurately about 2 g of the dried material (*see* **C-2.1** of IS : 2052-1962†) in a tared porcelain, silica or platinum dish. Ignite with the flame of a Meker burner for about one hour. Complete the ignition by keeping in a muffle furnace at 600° ± 20°C until grey ash results. Cool in a desiccator and weigh. Ignite the dish again in the muffle furnace for 30 minutes, cool and weigh. Repeat this process until the difference in weight between the two successive weighings is less than one milligram. Note the lowest weight.

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*Specification for water, distilled quality (*revised*).

†Specification for balanced feed mixtures for cattle.

A-2. CALCULATION

A-2.1 Total ash (on moisture-free basis), percent by weight $= \frac{100\,(W_2 - W)}{W_1 - W}$

where

W_2 = the lowest weight in g of the dish with the ash,
W = weight in g of the empty dish, and
W_1 = weight in g of the dish with the dried material taken for the test.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg.1 m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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